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Patent Publication (Kokoku)

(54) [Title of the Invention] **YARN SHAKING INHIBITOR IN YARN-
FEEDING ROLLER DEVICE**

(57) **CLAIMS**

[Claim 1]

A yarn shaking preventing device in a yarn feeding roller unit characterized in that the yarn shaking preventing device, located between a yarn feeding roller unit and a separate roller installed in its vicinity, incorporates a wind-breaking board with a plurality of holes in order to prevent the yarn shaking caused in the yarn feeding roller unit by the accompanying airflow of the yarn feeding roller.

[Detailed description of the invention]

[Field of the invention]

This invention concerns a yarn shaking preventing device in a yarn feeding roller unit, in feeding or drawing units that supply thread at high speeds.

[Description of the prior art]

In the direct spinning-drawing method, a wind-breaking board is provided with the purpose of preventing yarn shaking in the space between a cylindrical yarn feeding driving roller and a separate roller installed in the vicinity of said yarn feeding roller.

In order to facilitate the comprehension of the present invention, an explanatory drawing of a conventional spinning-drawing unit is shown in Figure 2.

A line of thread issuing from a melt-spinner nozzle in a yarn cylinder 10 is cooled by an air current, an oil applicator unit 11 is provided for applying oil to the line of thread, then a yarn guide 12, as yarn 2, is provided for collecting the single yarns composing the line of thread. Following this yarn guide 12, a yarn feeding roller unit A which incorporates a yarn shaking prevention device is provided. The yarn feeding roller unit is composed of a separate roller 1 and a yarn feeding roller 4. When the roller turns at high speed, an accompanying airflow occurs at the perimeter of the yarn feeding roller, which shakes the yarn that is spooling away; in order to prevent this effect, a wind-breaking board 3 is

provided along the longitudinal direction of the yarn feeding roller 4. The yarn feeding unit is composed of two sub-groups, as shown in figure 2, there the line of thread is drawn between the two sets of rollers (the yarn feeding roller 4 acts as the heating roller). After drawing, the drawn yarn passes through the yarn guide 13, then it is tweaked left and right by the traverse motion guide 14, then it is spooled up into a thread package 17 on a bobbin 16 driven by a friction roller 15.

In current the state of the art, as shown in figure 3, the high speed turning of the yarn feeding roller 4 generates an accompanying air flow (indicated by arrow 40), which rebounds on the windbreak board 3; this prevents the shaking of yarn 20 by the accompanying airflow. However, as shown by arrow 41, that way it cannot be helped that the bouncing airflow so created provokes the shaking of yarn 20'. The shaking of said yarn 20' may cause it to contact the adjacent yarns being wound in between the yarn feeding roller 4 and the separate roller 1; also if the yarn shifts onto the top of the roller, its friction with the axial direction of the roller may cause fluff, single yarn breaking, single yarn splitting, etc, all of which make the winding of the yarn in roller 4 deficient.

[Means for solving the problem]

In order to prevent the drawbacks described above, this invention incorporates a plurality of holes in the wind-breaking board.

[Effect]

In this invention, thanks to a plurality of holes in the wind-breaking board, the accompanying airflow heading onto the wind-breaking board is partially diffused passing through the holes, thus the negative influence of the rebounding airflow can be countered for the most part.

[Example]

Figure 1 is an enlarged diagram of the mounted wind-breaking board: 1 is the separate roller, 4 is the yarn feeding roller, a wind-breaking board 3 is provided adjacent to the yarn feeding roller 4 to prevents the yarn shaking caused by the accompanying airflow

generated when the yarn feeding roller 4 rotates at high speed. 31 is a plurality of holes opened in the wind-breaking board 3. The wind-breaking board 3 is fixed onto a support bar 33 by means of bolts 34, said support bar 33 is fastened onto the frame of the unit by means of the mounting element 32.

The effect of the wind-breaking board according to the present invention is described in Figure 4: as the yarn feeding roller 4 rotates at high speed, an accompanying airflow 4 is generated (indicated by arrow 40), which hits the wind-breaking board, but thanks to the plurality of holes 31 opened there, the airflow disperses passing through the holes as shown by arrow 42; the remaining the air does not rebound but flows along the board. Since it does not bounce back, as in the conventional wind-breaking boards shown in figure 3, the shaking of yarn 20' caused by the rebound of the accompanying airflow can be thus prevented.

[Results]

The yarn shaking preventing device of the present invention described above can decrease the rebounding airflow on a wind-breaking board caused by the accompanying airflow of a yarn feeding roller, making it possible to prevent yarn shaking, thereby preventing the formation of fluff, single yarn splitting and yarn breaks upon spooling on the rollers, thereby increasing both the quality of the yarn and the overall productivity.

Furthermore, because the shaking of yarn can be prevented, yarn pitch can also be narrowed, which allows shorter roller lengths and therefore a reduction in the rollers cost.

Also, if a yarn feeding roller unit according to this invention is used as a drawing roller, it is possible to fix the drawing point thanks to the prevention of yarn shaking, thereby improving the quality of the obtained drawn yarn. In addition, the shorter length of the rollers makes simultaneous multiple-yarn drawing easier.

[Brief Description of the Drawings]

Figure 1 shows an enlarged view of the mounting of the wind-breaking board of this invention, Figure 2 is a simplified drawing of a spinning-drawing unit, Figure 3 depicts the effect of conventional wind-breaking boards, Figure 4 describes the effect of a wind-breaking board according to the present invention.

[Legend]

- 1 separate roller
- 2 yarn
- 3 wind-breaking board
- 31 holes
- 32 mounting element
- 4 yarn feeding roller
- 12 yarn guide
- 13 yarn guide
- 14 traverse motion guide
- 15 friction roller
- 16 bobbin
- 17 thread package

Figure 3

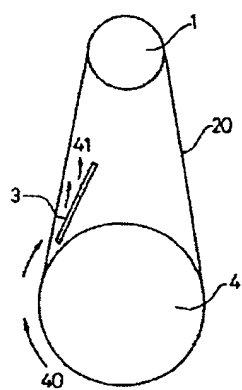
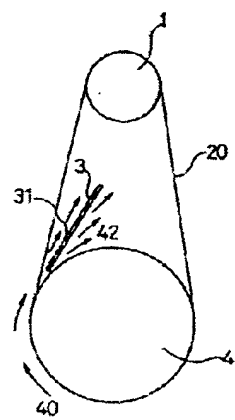


Figure 4



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Abstract

PURPOSE: To inhibit yarn shaking by piercing many holes in a windbreak board installed between a yarn-feeding roller and a separating roller.

CONSTITUTION: A windbreak board 3 is installed in the vicinity of a yarn-feeding roller between a yarn-feeding roller 4 and a separate roller 1 and many holes 31 are pierced in the windbreak board 3. Thereby, repelled air current at the windbreak board owing to accompanying air current at the yarn-feeding roller is reduced.

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(54) [Title of Invention] IN YARN FEED ROLL EQUIPMENT, YARN VIBRATION PREVENTING DEVICE

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(56) 【参考文献】

【文献】 特開 昭 5 8-2 6 7 6 7 (J P, A)

(57) 【特許請求の範囲】

【請求項 1】 糸送りローラと、該糸送りローラに並設されているセパレートローラとからなり、糸送りローラとセパレートローラとの間に、糸送りローラの随伴気流による糸揺れ防止のための防風板を設けた糸送りローラ装置の糸揺れ防止装置において、該防風板に多数の孔を設けたことを特徴とする糸送りローラ装置における糸揺れ防止装置。

【発明の詳細な説明】 【産業上の利用分野】

この発明は高速で糸条を供給するフィード装置又は延伸装置における糸送りローラ装置の糸揺れ防止装置に関する。

【従来の技術】

直接紡糸延伸法において、加熱延伸部として駆動回転する円筒型の糸送りローラと該糸送りローラに並設されたセパレートローラとの間に糸揺れ防止を目的とする防風板が設けられている。

この発明の理解を容易にするために、第 2 図に従来の紡糸延伸装置の概略説明図を示せば、溶融紡糸口金の下流に冷却風により糸条を冷却する紡糸筒 10、糸条に油剤を付着させる油剤付与装置 11 が設けられ、その下流に糸条を構成している単糸を集束して糸 2 とする糸ガイド 12 が設けられている。この糸ガイド 12 の下流には糸揺れ防止装置を設けた糸送りローラ装置 A が設けられている。糸送りローラ装置はセパレートローラ 1、及び糸送りローラ 4 とからなる。ローラの回転が高速になると、糸送りローラの周辺に随伴気流が起り、巻回して走っている糸を

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(56) [Cited Reference(s)]

[Literature] Japan Unexamined Patent Publication Show a 58 - 26767(JP,A)

(57) [Claim(s)]

[Claim 1] Yarn vibration preventing device in yarn feed roll equipment which designates that multiple holes is provided in the said Siler divaricatum Benth. et Hook. plate in yarn vibration preventing device of yarn feed roll equipment which consists of separate roll being installed in yarn feed roll and said yarn feed roll, with yarn feed roll and separate roll, provides Siler divaricatum Benth. et Hook. plate for yarn vibration prevention with accompanying air stream of the yarn feed roll, as feature.

[Description of the Invention] (Industrial Area of Application)

As for this invention it regards yarn vibration preventing device of yarn feed roll equipment in feed device or drawing equipment which supplies yarn with high speed.

(Prior Art)

Siler divaricatum Benth. et Hook. plate which designates yarn vibration prevention as objective with the cylindrical yarn feed roll which it drives turns in directly spinning drawing method, as hot drawing section and the separate roll which is installed in said yarn feed roll was provided.

If in order to make understanding of this invention easy, conceptual explanatory diagram of the conventional yarn-spinning drawing equipment is shown in Figure 2, in downstream of melt spinning spinneret finish application device 11 which deposits can provide finish in spinning tube 10 and yarn which cool yarn with cooling air, converging doing single fiber which forms the yarn in downstream, yarn guide 12 which it makes yarn 2 is provided. yarn feed roll equipment A

揺らすので、それを防止するためにローラ4の長手方向に沿って、防風板3が設けられている。糸送り装置Aは図示の如く2組設けられており、両ローラ装置の間で糸条を延伸する(糸送りローラ4は加熱ローラとしての作用を行っている)。延伸後の糸は糸ガイド13を経て、綾振りガイド14により左右に綾振りされ、フリクションローラ15により駆動回転されるボビン16上に糸条パッケージ17として巻取られる。

ところが従来の防風板3は、1枚の板であるので、第3図に示す如く糸送りローラ4の高速回転によって発生する随伴気流(矢印40によって示されている。)は、防風板3に当たってはね返り、随伴気流に依る糸20の揺れを防止する。しかしながら矢印41で示すようなはね返り気流を生ずるのでそれによって糸20'の糸揺れが発生するという欠点を免がれなかった。この糸20'の揺れのために糸送りローラ4とセパレートローラ1との間に巻回された隣接糸が互に接触したり、糸がローラ上を移動する際に、ローラとの軸方向の摩擦などにより毛羽、単糸割れ、糸切れ等が生じローラ4に糸が巻き付くという不具合がある。

[課題を解決するための手段]

この発明においては、前記の欠点を防止するために、防風板に多数の孔を設けたものである。

[作 用]

この発明においては、防風板に多数の孔が設けられているので防風板に当たった随伴気流は一部は孔を通して拡散されるので、はね返ってくる気流の悪影響をほぼなくすることができる。

[実施例]

第1図は防風板の取付状態についての拡大説明図であって、1はセパレートローラ、4は糸送りローラであって、糸送りローラ4が高速回転したとき発生する随伴気流による糸揺れを防止する防風板3が糸送りローラ4の傍に設けられている。31は防風板3にけられた多数の孔である。又防風板3は支持バー33にボルト34で係合され取付部32によって装置フレームに固定

which provides yarn vibration preventing device is provided in downstream of this yarn guide 12. yarn feed roll equipment consists of separate roll 1, and yarn feed roll 4. When revolution of roll becomes high speed, accompanying air stream to happen in the periphery of yarn feed roll, winding, because it sways yarn which it is running, in order to prevent that, Siler divaricatum Benth. et Hook. sheet 3 is provided alongside longitudinal direction of yarn feed roll 4. (yarn feed roll 4 operates as heated roll.) where yarn feed equipment A is provided, as though it is an illustration, 2 sets draws yarn between both rollers equipment. yarn after drawing passing by yarn guide 13, traversing is done on left and right by traversing guide 14, is retracted on bobbin 16 which it is driven turns by friction roll 15 as yarn package 17.

However because conventional Siler divaricatum Benth. et Hook. plate 3, it is a plate of one layer, as though it shows in Figure 3, accompanying air stream (It is shown by arrow 40.) which occurs due to high speed rotation of the yarn feed roll 4 to rebound at time of Siler divaricatum Benth. et Hook. plate 3, shaking of yarn 20 with accompanying air stream is prevented. But, because rebounding kind of stream which is shown with the arrow 41 is caused, deficiency that was not escaped yarn vibration of yarn 20' occurs with that. When for shaking this yarn 20' adjacent yarn which winding is done contacts mutually with yarn feed roll 4 and separate roll 1, yarn moves on roll, the feather, single fiber break and yarn break etc occur and due to friction etc of shaft direction of roll there is a disadvantage that yarn is coiled round to roll 4.

(means in order to solve problem)

At time of this inventing, in order to prevent aforementioned deficiency, it is something which provides multiple holes in Siler divaricatum Benth. et Hook. plate.

(For work)

At time of this inventing, because multiple holes is provided in the Siler divaricatum Benth. et Hook. plate, because as for accompanying air stream which hit to Siler divaricatum Benth. et Hook. plate as for part passing by hole, scattering it is done, almost you can lose the adverse effect of stream which rebounds.

(Working Example)

As for Figure 1 being an enlarged explanatory diagram concerning mounted state of Siler divaricatum Benth. et Hook. sheet, as for 1 as for separate roll and 4 being a yarn feed roll, when the yarn feed roll 4 high speed rotation doing, Siler divaricatum Benth. et Hook. sheet 3 which prevents yarn vibration due to

されている。第4図はこの発明の防風板の作用の説明図であって、糸送りローラ4が高速回転すると矢印40で示される随伴気流が発生し、防風板に当るが、板に多数の孔31があいているので、矢印42で示すように、気流は孔を通り抜けて拡散し、残りの空気もはね返ることなく、板に沿って流れてしまうので、第3図に示す従来の防風板のようにはね返ることがないので、随伴気流のはね返りによる糸20'の糸揺れを防止することができる。

[効果]

この発明の糸揺れ防止装置は前記のような構成であって、糸送りローラの随伴気流による防風板のはね返り気流を減少させることができ、糸揺れを防止することができ、そのため毛羽の発生、単糸割れが防止でき、また、ローラへの巻き付きによる糸切れが防止でき、糸質及び生産性が向上する。

更に糸揺れが防止できるので、糸ピッチを狭くすることができ、そのためローラ長が短かくてすみ、ローラコストを低減することができる。

またこの発明の糸送りローラ装置を延伸ローラとして用いた場合には、糸揺れを防止することにより、延伸点の固定が可能となり、得られた延伸糸の糸質が向上する。またローラ長が短かくできるため、多糸条同時延伸が容易となる。

【図面の簡単な説明】第1図はこの発明の防風板の取付部の拡大説明図、第2図は紡糸延伸装置の概略説明図、第3図は従来の防風板の作用の説明図、第4図はこの発明の防風板の作用の説明図である。

符号の説明

1……セパレートローラ、2……糸、

the accompanying air stream occurs is provided in side of yarn feed roll 4. As for 31 it is a multiple holes which was opened to Siler divaricatum Benth. et Hook. sheet 3. In addition Siler divaricatum Benth. et Hook. sheet 3 is engaged by support bar 33 with bolt 34 and is locked to equipment frame by attachment part 32. As for Figure 4 being an explanatory diagram of action of Siler divaricatum Benth. et Hook. sheet of this invention, being yarn feed roll 4 does high speed rotation when, accompanying air stream which is shown with arrow 40 occurs, Because hits to Siler divaricatum Benth. et Hook. sheet but, multiple holes 31 opens in sheet, as shown with arrow 42, because passing through hole, scattering to do the stream, it flows without also remaining air rebounding, alongside the sheet, like conventional Siler divaricatum Benth. et Hook. sheet which it shows in Figure 3 because there are not times when it rebounds, it can prevent yarn vibration of yarn 20' due to rebounding of accompanying air stream.

(Effective fruit)

As for yarn vibration preventing device of this invention aforementioned way it is a constitution, to decrease rebounding stream of Siler divaricatum Benth. et Hook. plate due to the accompanying air stream of yarn feed roll to prevent yarn vibration yarn break due to being coiled round to roll, because of that be able to prevent the occurrence and single fiber break of feather, in addition, it to be possible, it to be possible, be able to prevent, yarn property and productivity improve.

Furthermore because it can prevent yarn vibration, it is possible, to make the yarn pitch narrow, because of that roll length it may be short, and decrease roll cost.

In addition when yarn feed roll equipment of this invention it uses, as drawing roll fixing of draw point becomes possible by preventing yarn vibration, the yarn property of drawn fiber which is acquired improves. In addition because it can make roll length short, multithread simultaneous drawing becomes easy.

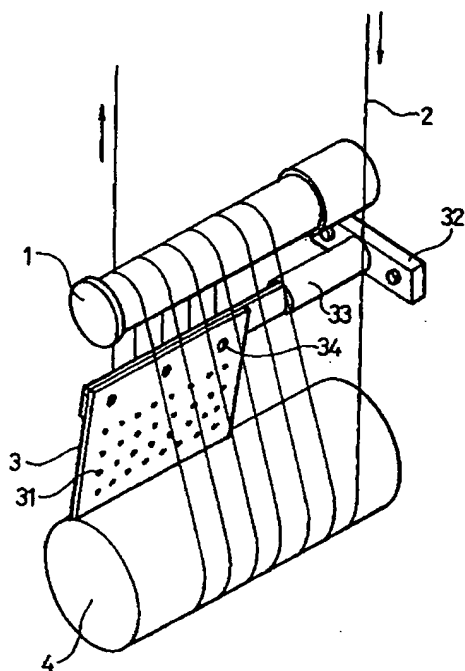
[Brief Explanation of the Drawing(s)] As for Figure 1 enlarged explanatory diagram of attachment part of Siler divaricatum Benth. et Hook. plate of this invention, as for Figure 2 conceptual explanatory diagram of yarn-spinning drawing equipment, as for Figure 3 the explanatory diagram of action of conventional Siler divaricatum Benth. et Hook. plate, as for Figure 4 it is an explanatory diagram of action of Siler divaricatum Benth. et Hook. plate of this invention.

Explanation of code

1..... separate roll and 2..... yarn,

3.....防風板、31.....孔、32.....取付部、
 4.....糸送りローラ、12.....糸ガイド、
 13.....糸ガイド、14.....綾振りガイド、
 15.....フリクションローラ、16.....ボビン、
 17.....糸条パッケージ。

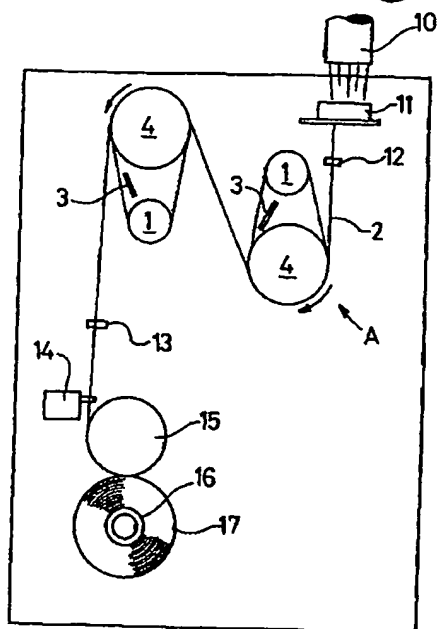
【第1図】



3..... Siler divaricatum Benth. Hook. plate and 31
 hole, 32..... attachment part ,
 4..... yarn feed roll and 12..... yarn guide ,
 13..... yarn guide and 14..... traversing guide,
 15..... friction roll and 16..... bobbin ,
 17..... yarn package .

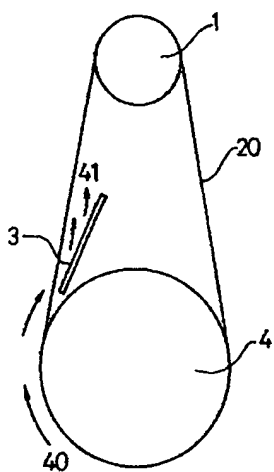
< Figure 1 >

【第2図】

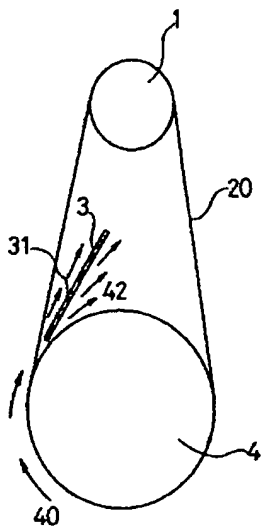


< Figure 2 >

【第3図】



< Figure 3 >



【第4図】

< Figure 4 >